# Estimates and Forecasts of Housing Units, Households and Population

## Fairfax County, Virginia

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# Methodology

## HOUSING UNITS ESTIMATES

The Fairfax County Department of Tax Administration's real estate tax assessment files as of January 1 of the current year provide the foundation from which the current counts of housing units are estimated. In addition to the number of units located on a property, housing attributes, such as the type of unit, age of the structure, percent complete, condition of the structure, assessed value, sales value, existing land use and zoning, and access to utilities, are obtained from the real estate tax assessment files for each property. Because only habitable housing units are included, certain conditions must be met in order for a housing unit to be included in the current inventory.

Conditions for inclusion in the Housing Unit inventory include the following:

- Existing land use designates that the property contains a housing unit with residential use.
- Number of housing units on a property is consistent with existing land use.
- Housing unit has sufficient assessed value to indicate an adequate structure on the property.
- Housing unit is hooked up to utilities (i.e., water, sewer, gas, electric) and/or access to well and/or septic tank.
- Building permits and inspections data indicate sufficient completeness of construction of housing units.

In some cases, a property has an existing land use designation of vacant land with a dilapidated residential structure. Many of these housing units are old structures in very poor condition but some are still used. The criteria used to determine if a dilapidated structure is a habitable housing unit are 1) the owner's mailing address is the same as the property address and/or 2) the housing unit is hooked up to utilities (i.e., water, sewer, electric, gas). Units meeting these criteria are brought into the current inventory. There are very few housing units in this category.

Based on the current land use, housing units are categorized as one of the following eight categories:
- Single Family Detached Units (single-family and mobile home)
- Single Family Attached Units (duplexes, townhouses and multiplexes)
- Multifamily Units (garden/low-rise, mid-rise, high-rise)

The multifamily units of 1 to 4 stories are usually considered garden style or low-rise structures, 5 to 8 stories are mid-rise structures, and 9 or more stories are high-rise structures. The housing unit estimates include both rental and owned units and housing units on Fort Belvoir but not George Mason University. The housing units on Fort Belvoir and George Mason University are not part of the county's real estate assessment database. Fort Belvoir has provided us the information that allows us to capture the type and location of their units. Similar information will be incorporated in the future years. Also, continuing care and assisted living units are part of the housing unit inventory. They are classified in a similar manner to multifamily units.

## HOUSEHOLDS ESTIMATES

Current household's estimates are derived as of January 1 of each year. A household is an occupied housing unit. It includes all the people who occupy that unit as their usual place of residence. The information used to determine housing occupancy rates by housing type and geography comes from water utility accounts serving Fairfax County residents, U.S. Census Bureau survey data and Fairfax County surveys of rental housing complexes. Water consumption and sewer usage is analyzed using water accounts information for housing units with individual meters. Occupancy is determined when water/sewer consumption is above a certain level. The unit is deemed vacant if there is very low consumption, zero consumption or no utilities connected. The occupancy rates are applied and calculated based on unit type and sub-geographies of the county. For homes that use both septic tanks and well water, occupancy rates cannot be determined using the data from water utility accounts. These housing units are assumed to have the same occupancy rates as other similar units within the same geographical area.

Many multifamily housing structures do not have units with individual water/sewer meters. The occupancy rates for these multifamily units are derived from the annual Fairfax County surveys of rental housing complexes containing five or more units. These surveys include information for both privately owned rental complexes and subsidized rental complexes. The occupancy rates derived from the rental complexes are applied to unmetered rental and non-rental multifamily units by sub-geographies of the county. Occupancy data from U.S. Census Bureau survey results for Fairfax County are analyzed and compared to the occupancy rates derived from the water accounts and rental housing complexes to help validate the resulting occupancy rate assumptions.

## POPULATION ESTIMATES

Total population estimates are derived as of January 1 of each year. The total population estimate is a combination of household population (persons living in housing units) and group quarters population. Household population estimates are developed by applying household size factors and variances to occupied

housing units (households). Household sizes differ by the type of housing unit and where the housing unit is located. The household size assumptions are based on the most recent U.S. Census Bureau survey data. Historical and current data and their variances are analyzed to discern developing patterns and trends.

Group quarter's population is those persons who reside in institutions (correctional facilities, nursing homes) and non-institutional facilities (college dormitories, military barracks and adult group homes). Group quarter's population for each land parcel where these facilities are located is added to the household population to obtain the total population estimate. The group quarters populations for Fort Belvoir, Fairfax County adult and juvenile detention centers, pre-release centers, nursing homes, George Mason University dormitories, and other group facilities, are obtained directly from these institutions. Institutional and group quarters population is included in all geographies.

## HOUSING UNIT FORECASTS

The forecasts of housing units in Fairfax County are based on planned residential land uses and densities, vacant and underutilized residential planned land, and residential units at various stages in the process of being developed (in the "development pipeline"). Both short-term and long-term forecasts are produced, each with different methods, with long-term forecasts building upon the short-term figures. All housing unit forecasts reflect projections as of January 1 of each year.

### SHORT-TERM FORECASTS

The short-term housing unit forecast horizon is five years into the future. Active residential development is the primary influence on short-term forecasts. Fairfax County's short-term forecasting method assumes that housing units in the "development pipeline" are expected to be built before units which may be planned at some future time that are not presently in that process. Furthermore, housing units in the process of being developed are expected to be completed according to their stage within the process as of January 1 of the current report year. The general stages considered are:

1. Units under construction.
2. Units with building permits issued but not started.
3. Units shown on an approved development plan.
4. Units shown on a development plan under review.
5. Units shown on a development plan proffered as a condition to a rezoning approval.
6. Units shown on a proposed development plan submitted with a rezoning application under review.

The past five years of "development pipeline" data along with assumption data on how likely and quickly housing units will be built are used to forecast short-term housing unit growth. The "development pipeline" data is analyzed and linked by parcel (location) across the records contained in the three "development pipeline" databases to ensure that housing units are not double counted or missed. The complexities of connecting the "development pipeline" data by parcel include:

- Housing units can enter the "development pipeline" at any stage – rezoning, development plan or building permit.
- Rezoning and/or development plan housing units may move to the next stage of the "development pipeline" in sections when they are part of a larger submission.
- Rezoning applications can be associated with multiple development plans and a development plan can be associated with multiple rezoning applications.
- Some housing units in the "development pipeline" may be replacement units for already existing units, thus, not adding to additional future units.

To address the complexities of tracking and linking housing units through the "development pipeline," several decision tree methodologies are incorporated into the short-term forecasting model.

*Rezonings:* Parcel identification numbers and the rezoning application numbers are used as the primary means of tracking information through the rezoning processes. Land use and zoning district information contained in a zoning application allow a determination of housing unit type to be made. If a land parcel is involved in more than one rezoning over the past five years, only the most recent rezoning application is selected to be included in the analysis. No housing unit numbers are typically associated with proposed rezoning applications but the number of housing units associated with the rezoning is usually included in the data for an approved rezoning. For rezoning applications without housing unit numbers, an estimate is developed based on the proposed zoning and the land area associated with the application. Housing units are counted in the rezoning stage of the pipeline only if there are no development plans associated with the rezoning. If a development plan(s) is associated with the rezoning, the number of housing units in the development plan(s) are removed from the number of housing units associated with the approved rezoning. Most linkages between rezoning applications and development plans can be made through tracking IDs in the relational databases for these two applications. The relationship between rezonings and development plans is many to many; that is, a single or multiple rezonings may be associated with one or several development plans.

*Development Plans:*   Parcel identification numbers and the development plan application numbers are used as the primary means of tracking information through the development plan stage.   However, parcel identification numbers associated with development plans may or may not be the same as the parcel identification numbers listed for associated rezonings or building permits.   This occurs because land parcels are often consolidated and/or subdivided during the development plan stage of the "development pipeline" process.   The development plan status information is used to assign whether the plan is submitted or approved and land use and zoning information is used to assign housing unit type. Housing units are counted in the development plan stage only if there are no building permits associated with the parcels in the development plan.   If building permits are associated with the development plan, those housing units are assumed to have moved to the next stage of the "development pipeline" and are no longer reflected in the development plan stage.   Unfortunately, connecting building permits to development plans is not always a straightforward process because sometimes the parcel identification numbers reflected in the development plans are different than those associated with the permits.   To make the association between development plans and building permits, historical parcel information tracking parent-child relationships and spatial location information are used.   The relationship between development plans and building permits are one to many.

*Building Permits:*   Parcel identification numbers and building permit application numbers are used as the primary fields for tracking housing units through the building permit stage.   The permit application number is used to link building permits to its inspections.   The parcel identification number associated with a building permit may or may not be a current parcel identification number and may or may not match the parcel identification numbers in the associated development plan.   This makes linking development plans and building permits difficult. Therefore if a link is not found between a building permit and a development plan, historical parcel identification numbers linked by parent-child relationships are used to find associations.   Housing units in the building permit stage of development also are checked against housing units in the current inventory to determine if the units are already captured in the current inventory.   This occurs when the housing units under construction are replacement units or are complete enough to already be captured in the current inventory (80 percent complete).   A housing unit in the building permit stage is considered "under construction" if any inspections are associated with the building permit.

*Likelihood of Development Assumptions:*   Not every prospective housing unit in the "development pipeline" will be built and actually become a housing unit.   Thus,

assumptions are made about the likelihood of housing units in each development stage becoming future housing units. These likelihood assumptions are developed using statistical analyses of the historical proportions of "development pipeline" housing units that are eventually built.

*Timing of Development Assumptions:* Housing units in the "development pipeline" may take less than a year to more than 10 years to be completed. Therefore, assumptions about how quickly housing units will progress through the "development pipeline" are made. These timing assumptions are based on statistical analyses that track how quickly housing units move to completion from each stage of the "development pipeline." The statistical analyses provide average lengths of time, medians and deciles.

## LONG-TERM FORECASTS

The long-term housing unit forecast horizon is beyond five years in the future. Several types of assumptions are developed to produce long-term housing unit forecasts – planned land capacity assumptions, density range assumptions, site characteristics assumptions, and timing of development assumptions. The long-range housing unit forecasts are developed for a 30 year forecast period. For each land parcel, three housing unit forecast scenarios are produced – low, most likely and high forecasts. These scenarios are based on the range of density allowed in the Fairfax County Department of Planning and Zoning's *Comprehensive Plan for Fairfax County, Virginia*, the proximity of the property to business and transportation hubs or other features, and parcel characteristics that would make it more or less attractive for development. Only the most likely forecast scenarios are published in the annual *Demographic Reports*.

*Planned Land Capacity Assumptions:* After units in the development process are forecast to be completed, areas either reach build-out (no additional capacity exists for residential development according to planned land uses and exercising of plan option densities in the currently adopted *Comprehensive Plan*) or have additional capacity for residential development remaining on vacant or underutilized land. Land parcels located in plan option areas are treated differently than land parcels not contained in plan option areas. The additional capacity of land parcels not contained in plan option areas are analyzed individually. The additional capacity of land parcels contained in plan option areas are analyzed as a group across all parcels comprising the plan option area.

*Density Range Assumptions:* Unlike the other long-range forecast assumption categories, the density range assumptions only affect the most likely forecast scenarios and do not apply to parcels contained in plan option areas. Planned

land uses associated with parcels provide a density range (i.e., 5 to 8 housing units per acre) rather than a specific density. Thus for the most likely forecast scenario, assumptions must be made about whether the parcel will be developed at the low, mid or high end of the planned land use density. These density range assumptions are developed by analyzing the proximity of the parcel to factors such as business and transportation hubs, sensitive watersheds, and sewers. Parcels near business and transportation hubs are most likely to be developed at the high end of the planned land use density; parcels in watersheds and that lack access to sewers are most likely to be developed at the low end of the planned land use density; whereas, other parcels are likely be developed at the middle of the planned land use density range.

*Site Characteristics Assumptions:* Site specific characteristics are used to modify the likelihood and capacity of development as indicated by the *Comprehensive Plan* and its options. The site characteristics considered include recent sales of vacant property; recent development activity; age of existing structures; resource protection areas; tax exempt status; small additional potential; and buildability factors such as flood plains, steepness of slope, accessibility, and lack of sewers on land that does not percolate. Within the model, separate and unique assumptions can be developed for each of these site factors.

*Timing of Development Assumptions:* Long-range forecast 'timing of development assumptions' are based on past trends and housing absorption rates. In addition, external events such as economic growth cycles are taken into account when developing these long-range 'timing of development assumptions.' Different 'timing of development assumptions' are applied to land parcels based on the site characteristics of the parcel.

## HOUSEHOLD FORECASTS

Households are occupied housing units. Thus, household forecasts are derived from the housing unit forecasts and reflect projections as of January 1 of each year. Forecast households are calculated as the forecast number of housing units by type multiplied by a forecast occupancy rate. Occupancy rates are derived as the inverse of housing vacancy rates (i.e., occupancy rate = 1 – vacancy rate). Vacancy/occupancy rates are applied based on estimates by housing type and geographical area.

*Vacancy and Occupancy Rate Assumptions:* Current vacancy rate assumptions are developed using information from several sources. Estimated vacancy rates by housing type and geography are derived using data from the U.S. Census

Bureau's American Community Surveys, survey data collected on the county's rental housing complexes, and an analysis of inactive water accounts.  In the forecast years, vacancy/occupancy rates by type of housing unit are assumed to remain constant in Fairfax County.  This is based on past trends in vacancy/occupancy rates, which have remained stable by housing unit type for the last 20 years.  However as multifamily housing becomes a larger proportion of the total housing stock in the future, overall vacancy rates are expected to trend higher because multifamily housing typically has higher vacancy rates than single family detached and attached housing.


## POPULATION FORECASTS

Total population is the sum of two components – household population and group quarters population.  Two different methodologies are used to estimate and forecast household population and group quarter's population.  Household population is comprised of those persons who live in housing units.  Group quarter's population is those persons who live in institutions such as nursing homes, dormitories, military facilities, etc.  The Fairfax County total population forecasts reflect projections as of January 1 of each year.


### HOUSEHOLD POPULATION METHODOLOGY

Household population forecasts are derived from housing unit and household forecasts by housing unit type and geographic area.  Forecasts of household population are calculated using the following methodology.  The forecasts of the number of housing units by type are multiplied by occupancy rates and average household sizes.  Both occupancy rates and average household sizes are assigned to these housing unit counts by housing type and geographic area.

*Occupancy Rate Assumptions:*  Occupancy rate assumptions are developed using information from several sources.  Estimated occupancy rates by housing type and geography are derived using data from the U.S. Census Bureau's American Community Surveys, survey data collected on the county's rental housing complexes, and an analysis of inactive water accounts.  In the forecast years, occupancy rates by type of housing unit are assumed to remain constant in Fairfax County.  This is based on past trends in occupancy rates, which have remained stable by housing unit type for the last 20 years.  However as multifamily housing becomes a larger proportion of the total housing stock in the future, overall occupancy rates are expected to trend lower because multifamily housing typically has lower occupancy rates than single family detached and attached housing.

*Average Household Size Assumptions:*   Household size assumptions are based primarily on the most recent U.S. Census Bureau data and Fairfax County surveys.  Historical, current and forecast average household sizes and variances produced by the U.S. Census Bureau and Fairfax County surveys are analyzed to develop current and forecast average household sizes and variances by housing unit type and geography.  The trends influencing average household sizes in Fairfax County include housing type, racial/ethnic diversity, and socioeconomic factors.

Household sizes tend to differ by the size and style of housing units.  Fewer persons per unit typically live in multifamily housing than in single family detached and single family attached housing.  As the mix of housing styles changes over time to include more multifamily housing, downward pressure is applied to the county's overall average household size.

Households headed by racial and ethnic minorities in Fairfax County tend to have larger average household sizes than households with White heads of household.  Since 1970, these minority households have become an increasingly larger proportion of all households.  This trend has exerted upward pressure on Fairfax County's overall average household size.  However within each racial/ethnic group, household sizes generally have been slowly shrinking over time due to socioeconomic factors.

Socioeconomic trends that have tended to reduce average household sizes within households of all racial and ethnic groups include:

- Fewer conventional partnerships.  More adults are remaining single whether or not they are parents and those who do marry often delay until they are older than past generations.  In addition, better finances and fewer negative connotations have resulted in higher numbers of divorces.
- Fewer offspring.  Greater economic and occupational choices for women have resulted in fewer children per family and delays in beginning families.
- More choices for older adults.  Older adults have more alternatives that allow them to age independently and, thus, they are less likely to live with family as they age.

One socioeconomic trend recently has become strong enough to put noticeable upward pressure on household sizes in Fairfax County – economic stress. Economic stress often results in the doubling up of both family and nonfamily members.  The primary sources of this economic stress are two-fold.  This economic stress is coming from the current recession with its high unemployment

and/or under-employment and is coming from the area's high housing costs (housing affordability).

*GROUP QUARTERS POPULATION METHODOLOGY*

Group quarter's population for each geographical area is added to the household population to obtain the total population estimate. The population of special institutions, such as Fort Belvoir, Fairfax County adult and juvenile detention centers, pre-release centers, nursing homes, George Mason University dormitories, and other group facilities, are obtained directly from these institutions. Institutional and group quarter's population is included in all geographies.

# NON-RESIDENTIAL GROSS FLOOR AREA AND GENERAL EXISTING LAND USE

## FAIRFAX COUNTY, VIRGINIA

## NONRESIDENTIAL GROSS FLOOR AREA

The nonresidential gross floor area data are derived from Fairfax County Department of Tax Administration (DTA) real estate tax assessment files as of January 1 of the current year. Each property in the table consists of parcel identification number, element(s), existing land use, year built and square footage of the structure. The parcel maybe associated with an element (part of an appraisal unit), multiple elements or no elements. Therefore, a parcel may have multiple records in the table to capture element(s) associated with their respective existing land use and gross floor area.

## GENERAL EXISTING LAND USE

The Fairfax County Department of Tax Administration's (DTA) real estate tax assessment files as of January 1 of the current year provide the foundation from which the General Existing Land Use layer is created. Each property in the DTA database has a designated existing land use. The properties with their attributes are joined with Fairfax County's Geographic Information System spatial data. There are several hundred types of existing land uses and over 400,000 parcels in the DTA database. Because of the large number of specific land use codes, they

are grouped into general land use categories and then color coded based on the general use to make them useable for displaying visually in a map. A layer for subdivision polygons consisting of condominiums (residential and nonresidential) and common areas is created to capture the land that is co-owned by the condominiums units and homeowners association.

The General Existing Land Use layer contains the following categories:

- Agricultural
- Commercial (office, retail, industrial)
- Low-density residential (single-family detached, duplex, mobile home)
- Medium-density residential (single-family attached, multiplex)
- High-density residential (apartment style – low-rise, mid-rise & high-rise)
- Institutional
- Industrial, light and heavy
- Open land, not forested or developed
- Public
- Recreation
- Utilities

# Data Dictionary

## TABLES NAMES AND DESCRIPTION

| IPLS_CURRE_HHLDS_G | IPLS current households |
|---|---|
| IPLS_CURRE_HOUSI_UNIT_G | IPLS current housing units |
| IPLS_CURRE_POPUL_G | IPLS current population |
| IPLS_FOREC_HHLDS_G | IPLS households forecasts |
| IPLS_FOREC_HOUSI_UNIT_G | IPLS housing units forecasts |
| IPLS_FOREC_POPUL_G | IPLS population forecasts |
| IPLS_GENER_EXIST_LAND_USE_G | IPLS general existing land use |
| IPLS_MARKE_SALE_RATIO_G | IPLS market value – sales - ratio |
| IPLS_NON_RESID_GFA_G | IPLS nonresidential gross floor area |

### COLUMN NAME(S) OF "IPLS_CURRE_HHLDS_G" TABLE

IPLS current households estimates. Households are occupied housing units. Typically, the CURRE_HHLDS field is used as the most likely estimate. The LOW_ESTIM_HHLDS and HIGH_ESTIM_HHLDS fields provide a low-high range around the CURRE_HHLDS estimate. Table contains one record for a PIN in a single year. Joining housing unit and population or forecast tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|---|---|---|---|
| OBJECTID | ArcMap unique identification number | INTEGER | NOT NULL |
| PIN | Parcel identification number | VARCHAR2(50) | NOT NULL |
| VALID_TO | Upper validity date | DATE | Example: 1-JAN-XXXX |
| CURRE_HHLDS | Current year households - Most likely estimate | NUMBER(10,4) | |
| LOW_ESTIM_HHLDS | Low estimate households | NUMBER(10,4) | |
| HIGH_ESTIM_HHLDS | High estimate households | NUMBER(10,4) | |

## Column Name(s) of "IPLS_CURRE_HOUSI_UNIT_G" Table

IPLS current housing unit estimates. Table can contain multiple records for a PIN in a single year due to year built or housing unit type. Two fields must be combined to create a unique identifier – PIN, HOUSI_UNIT_TYPE and YEAR_BUILT. Joining household and population or forecast tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin. Joining household and population or forecast tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| PIN | Parcel identification number | VARCHAR2(50) | |
| HOUSI_UNIT_TYPE | Housing unit type | VARCHAR2(2) | SF – single family detached (SFD)<br><br>TH – townhouse unit (SFA)<br><br>MP – multiplex unit (SFA)<br><br>DX – duplex unit (SFA)<br><br>LR – low rise unit (MF)<br><br>MR – mid rise unit (MF)<br><br>HR – high rise unit (MF)<br><br>MH – mobile home |
| LUC | Land Use Code | VARCHAR2(4) | |
| YEAR_BUILT | Year Built | NUMBER(4) | |
| VALID_TO | Upper validity date | DATE | Example: 1-JAN-2007 |
| CURRE_UNIT | Current housing unit count | NUMBER(10,2) | |

## COLUMN NAME(S) OF "IPLS_CURRE_POPUL_G" TABLE

IPLS current population estimates. Typically, the CURRE_POPUL field is used as the most likely estimate. The LOW_ESTIM_POPUL and HIGH_ESTIM_POPUL fields provide a low-high range around the CURRE_POPUL estimate. Table contains one record for a PIN in a single year. Joining housing unit and household or forecast tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin. Joining housing unit and household or forecast tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| PIN | Parcel identification number | VARCHAR2(50) | |
| VALID_TO | Upper validity date | DATE | Example: 1-JAN-2007 |
| CURRE_POPUL | Current year population | NUMBER(10,4) | |
| LOW_ESTIM_POPUL | Low estimate population | NUMBER(10,4) | |
| HIGH_ESTIM_POPUL | High estimate population | NUMBER(10,4) | |

## COLUMN NAME(S) OF "IPLS_FOREC_HHLDS_G" TABLE

IPLS forecasted household estimates. Households are occupied housing units. Typically, the CURRE_YEAR_X_HHLDS field is used as the most likely estimate for each forecast year. The LOW_ESTIM_YEAR_X_HHLDS and HIGH_ESTIM_YEAR_X_HHLDS fields provide a low-high range around the CURRE_YEAR_X_HHLDS estimates. To derive a forecast year, add the YEAR_X number to the year in the VALID_TO field (i.e. CURRE_YEAR_1_HHLDS would be the forecast for 2008 when the VALID_TO date is 1-JAN-2007). This table contains 30 years of household forecast data (Year1 to Year 30). Table contains one record for a PIN in a single year. Joining housing unit and population or current tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| PIN | Parcel identification number | VARCHAR2(50) | |
| VALID_TO | Upper validity date | DATE | Example: 1-JAN-2007 |
| CURRE_YEAR_1_HHLDS | Year 1 current households forecast value | NUMBER(10,3) | Forecast for Year 1 is 2008 |

## Column Name(s) of "IPLS_FOREC_HHLDS_G" Table

IPLS forecasted household estimates. Households are occupied housing units. Typically, the CURRE_YEAR_X_HHLDS field is used as the most likely estimate for each forecast year. The LOW_ESTIM_YEAR_X_HHLDS and HIGH_ESTIM_YEAR_X_HHLDS fields provide a low-high range around the CURRE_YEAR_X_HHLDS estimates. To derive a forecast year, add the YEAR_X number to the year in the VALID_TO field (i.e. CURRE_YEAR_1_HHLDS would be the forecast for 2008 when the VALID_TO date is 1-JAN-2007). This table contains 30 years of household forecast data (Year1 to Year 30). Table contains one record for a PIN in a single year. Joining housing unit and population or current tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|---|---|---|---|
| LOW_ESTIM_YEAR_1_HHLDS | Year 1 low estimate households forecast value | NUMBER(10,3) | Forecast for Year 1 is 2008 |
| HIGH_ESTIM_YEAR_1_HHLDS | Year 1 high estimate households forecast value | NUMBER(10,3) | Forecast for Year 1 is 2008 |
| The CURRE_YEAR, LOW_ESTIM_YEAR, HIGH_ESTIM_YEAR fields repeat through year 30 | | | |
| CURRE_YEAR_30_HHLDS | Year 30 current households forecast value | NUMBER(10,3) | Forecast for Year 30 is 2037 |
| LOW_ESTIM_YEAR_30_HHLDS | Year 30 low estimate households forecast value | NUMBER(10,3) | Forecast for Year 30 is 2037 |
| HIGH_ESTIM_YEAR_30_HHLDS | Year 30 high estimate households forecast value | NUMBER(10,3) | Forecast for Year 30 is 2037 |

## Column Name(s) of "IPLS_FOREC_HOUSI_UNIT_G" Table

IPLS forecasts of housing units. Typically, the CURRE_YEAR_X_UNIT field is used as the most likely estimate for each forecast year. The LOW_ESTIM_YEAR_X_UNIT and HIGH_ESTIM_YEAR_X_UNIT fields provide a low-high range around the CURRE_YEAR_X_UNIT estimates. To derive a forecast year, add the YEAR_X number to the year in the VALID_TO field (i.e. CURRE_YEAR_1_UNIT would be the forecast for 2008 when the VALID_TO date is 1-JAN-2007). Table contains multiple records for a PIN in a single year. Two fields must be combined to create a unique identifier – PIN and HOUSI_UNIT_TYPE. Joining household and population or current tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| PIN | Parcel identification number | VARCHAR2(50) | |
| HOUSI_UNIT_TYPE | Housing unit type | VARCHAR2(10) | SFD – Single family detached includes SF<br><br>SFA – Single family attached includes TH, MP, and DX<br><br>MF – Multifamily includes LR, MR and HR<br><br>MH – Mobile homes |
| VALID_TO | Upper validity date | DATE | Example: 1-Jan-2007 |
| CURRE_YEAR_1_UNIT | Year 1 current housing units forecast value | NUMBER(10,2) | |
| LOW_ESTIM_YEAR_1_UNIT | Year 1 low estimate housing units forecast value | NUMBER(10,2) | |
| HIGH_ESTIM_YEAR_1_UNIT | Year 1 high estimate housing units forecast value | NUMBER(10,2) | |
| The CURRE_YEAR, LOW_ESTIM_YEAR, HIGH_ESTIM_YEAR fields repeat through year 30 | | | |
| CURRE_YEAR_30_UNIT | Year 30 current housing units forecast value | NUMBER(10,2) | |

## Column Name(s) of "IPLS_FOREC_HOUSI_UNIT_G" Table

IPLS forecasts of housing units. Typically, the CURRE_YEAR_X_UNIT field is used as the most likely estimate for each forecast year. The LOW_ESTIM_YEAR_X_UNIT and HIGH_ESTIM_YEAR_X_UNIT fields provide a low-high range around the CURRE_YEAR_X_UNIT estimates. To derive a forecast year, add the YEAR_X number to the year in the VALID_TO field (i.e. CURRE_YEAR_1_UNIT would be the forecast for 2008 when the VALID_TO date is 1-JAN-2007). Table contains multiple records for a PIN in a single year. Two fields must be combined to create a unique identifier – PIN and HOUSI_UNIT_TYPE. Joining household and population or current tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| LOW_ESTIM_YEAR_30_UNIT | Year 30 low estimate housing units forecast value | NUMBER(10,2) | |
| HIGH_ESTIM_YEAR_30_UNIT | Year 30 high estimate housing units forecast value | NUMBER(10,2) | |

## Column Name(s) of "IPLS_FOREC_POPUL_G" Table

IPLS forecasts of population. Typically, the CURRE_YEAR_X_POPUL field is used as the most likely estimate for each forecast year. The LOW_ESTIM_YEAR_X_POPUL and HIGH_ESTIM_YEAR_X_POPUL fields provide a low-high range around the CURRE_YEAR_X_POPUL estimates. To derive a forecast year, add the YEAR_X number to the year in the VALID_TO field (i.e. CURRE_YEAR_1_UNIT would be the forecast for 2008 when the VALID_TO date is 1-JAN-2007). Table contains one record for a PIN in a single year. Joining housing unit and household or current tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| PIN | Parcel identification number | VARCHAR2(50) | |
| VALID_TO | Upper validity date | DATE | Example: 1-JAN-2007 |
| CURRE_YEAR_1_POPUL | Year 1 current population forecast value | NUMBER(10,3) | |
| LOW_ESTIM_YEAR_1_POPUL | Year 1 low estimate population forecast value | NUMBER(10,3) | |

## COLUMN NAME(S) OF "IPLS_FOREC_POPUL_G" TABLE

IPLS forecasts of population. Typically, the CURRE_YEAR_X_POPUL field is used as the most likely estimate for each forecast year. The LOW_ESTIM_YEAR_X_POPUL and HIGH_ESTIM_YEAR_X_POPUL fields provide a low-high range around the CURRE_YEAR_X_POPUL estimates. To derive a forecast year, add the YEAR_X number to the year in the VALID_TO field (i.e. CURRE_YEAR_1_UNIT would be the forecast for 2008 when the VALID_TO date is 1-JAN-2007). Table contains one record for a PIN in a single year. Joining housing unit and household or current tables to this table is not straightforward. This is because some tables contain pins that are not in other tables and some tables contain multiple records for a single pin.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| HIGH_ESTIM_YEAR_1_POPUL | Year 1 high estimate population forecast value | NUMBER(10,3) | |
| The CURRE_YEAR, LOW_ESTIM_YEAR, HIGH_ESTIM_YEAR fields repeat through year 30 | | | |
| CURRE_YEAR_30_POPUL | Year 30 current population forecast value | NUMBER(10,3) | |
| LOW_ESTIM_YEAR_30_POPUL | Year 30 low estimate population forecast value | NUMBER(10,3) | |
| HIGH_ESTIM_YEAR_30_POPUL | Year 30 high estimate population forecast value | NUMBER(10,3) | |


## COLUMN NAME(S) OF "IPLS_GENER_EXIST_LAND_USE" TABLE

IPLS general existing land use information table/layer contains summarized categories of current land uses. The table in the Appendix has detailed description of existing land uses.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| OBJECTID | ArcMap unique identification number | INTEGER | NOT NULL |
| ACRES | Area | NUMBER(10,5) | |
| CATEG | General land use category | VARCHAR2 (60 Byte) | Agricultural, Commercial, Low, Medium and High density Residential, Industrial (light and heavy), Institutional, Open Land (Not forested or developed), |

## COLUMN NAME(S) OF "IPLS_GENER_EXIST_LAND_USE" TABLE

IPLS general existing land use information table/layer contains summarized categories of current land uses.  The table in the Appendix has detailed description of existing land uses.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| | | | Public, Recreation, Utilities |
| VALID_TO | Upper validity date | DATE | Example:  1-JAN-2007 |

## COLUMN NAME(S) OF "IPLS_MARKE_SALE_RATIO" TABLE

IPLS table containing residential market value estimates and most recent sales value for owned properties.  Table contains one record for a PIN in a single year.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| PIN | Parcel identification number | VARCHAR2(50) | |
| VALID_TO | Upper validity date | DATE | Example: 1-JAN-2007 |
| HOUSI_UNIT_TYPE | Housing unit type | VARCHAR2(2) | SF – single family detached (SFD) TH – townhouse unit (SFA) MP – multiplex unit (SFA) DX – duplex unit (SFA) LR – low rise unit (MF) MR – mid rise unit (MF) HR – high rise unit (MF) MH – mobile home (MH) |
| MARKE_SALE_RATIO | Market sale ratio – the estimated ratio between market value and assessed value | NUMBER(10,2) | |
| MARKE_VALUE | Market value – the estimated price of the housing unit in free market sale | NUMBER(10,2) | |

## COLUMN NAME(S) OF "IPLS_MARKE_SALE_RATIO" TABLE

IPLS table containing residential market value estimates and most recent sales value for owned properties. Table contains one record for a PIN in a single year.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| ASSES_VALUE | Assessed value | NUMBER(10,2) | |
| SALES_VALUE | Sales value – current year actual sales if sold | NUMBER(10,2) | |

## COLUMN NAME(S) OF "IPLS_NON_RESID_GFA" TABLE

IPLS nonresidential gross floor area information table. Information is incomplete for institutional properties that are not taxed. The existing land use reflects primary function of the structure (e.g. office building with daycare or deli will be classified as 'Office'). Table contains multiple records for a PIN in a single year. Two fields must be combined to create a unique identifier – PIN and ELEMENT.

| Name | Comment | Data Type | Data Values |
|------|---------|-----------|-------------|
| SEQUE_NUMBE | Sequence number | NUMBER(12) | |
| PIN | Parcel identification number | VARCHAR2(50) | |
| ELEMENT | Element | VARCHAR2(30) | |
| YEAR_BUILT | Year built | NUMBER(4) | |
| LUC | Land use code | VARCHAR2(4) | See IAS_DOMAIN for definitions |
| GENER_ACTIV_TYPE | General activity type | VARCHAR2(3) | IND – Industrial<br><br>INS- Institutional<br><br>OFF – Office<br><br>RET – Retail |
| GROSS_FLOOR_AREA | Gross floor area | NUMBER(10,2) | |
| VALID_TO | Upper validity date | DATE | Example: 1-JAN-2007 |

# Appendix

# GENERAL EXISTING LAND USE CODES (LUC)

| CODES | EXISTING LAND USE DESCRIPTION |
|-------|-------------------------------|
| 00 | Public Service Corporation |
| 011 | Single-family, Detached |
| 012 | Single-family, Semi-detached, garden court |
| 013 | Two or more Single-family, detached |
| 014 | Single-family structure NEC |
| 015 | Single-family residences influenced by commercial/industrial |
| 021 | Duplex, either vertical or horizontal |
| 029 | Two-family NEC |
| 031 | Townhouse in ownership development |
| 032 | Townhouse in condominium development |
| 033 | Townhouse in rental development |
| 034 | Multiplex in ownership development |
| 035 | Multiplex in condominium development |
| 036 | Multiplex in rental development |
| 037 | Combination of structure types |
| 039 | Townhouse or Multiplex NEC |
| 040 | Garden Apartments rental ( =<4 story) |
| 041 | Garden Style condominium (=<4story) |
| 042 | Medium rise apartments rental(5 to 8 story) |
| 043 | Medium rise style condo(5 to 8 story) |
| 044 | High rise apartments rental(=>9 no commercial) |

| CODES | EXISTING LAND USE DESCRIPTION |
|-------|-------------------------------|
| 045 | High rise style condo(=>9 no commercial) |
| 046 | High rise apartments rental(=>9 commercial) |
| 047 | High rise style condo(=>9 commercial) |
| 048 | Combination of Structure types |
| 049 | Apartment, Not Elsewhere Classified (NEC) including cooperatives |
| 051 | Mobile homes in park or court |
| 052 | Mobile homes not in park or court |
| 060 | Residential hotels & motels |
| 071 | Rooming & Boarding Houses |
| 072 | Membership lodgings |
| 073 | Residence halls & dormitories |
| 074 | Retirement homes & orphanages |
| 075 | Religious quarters |
| 076 | Nursing homes |
| 079 | Other group quarters NEC (not Military) |
| 081 | Motel without restaurant & other commercial |
| 082 | Motel with restaurant & other commercial |
| 083 | Hotel without restaurant & other commercial |
| 084 | Hotel with restaurant & other commercial |
| 085 | Tourist Home |
| 089 | Other transient lodging NECl |
| 091 | Garage, barn, outhouse, shed adjacent parcel unit |
| 092 | Private open space(planned development) |
| 093 | Private open space(not planned develop) |

| CODES | EXISTING LAND USE DESCRIPTION |
|-------|-------------------------------|
| 094 | Community Swimming Pool |
| 099 | Other residential NEC |
| 111 | Planned industrial park |
| 112 | Industrial conglomeration |
| 121 | Durable Manufacturing (not in Industrial Park) |
| 126 | Durable Manufacturing(in condo/not Industrial Park) |
| 127 | Durable Manufacturing(in cluster/not Industrial Park) |
| 131 | Nondurable Manufacturing(not in Industrial Park) |
| 135 | Printing & Publishing |
| 136 | Nondurable Manufacturing(in condo/not Industrial Park) |
| 137 | Nondurable Manufacturing(in cluster/not Industrial Park) |
| 140 | Research & Testing(not in Industrial Park /not in office) |
| 146 | Research & Testing(not in Industrial Park /in condo) |
| 147 | Research & Testing(not in Industrial Park /in cluster) |
| 150 | Wholesale, warehousing & storage (not in Industrial Park) |
| 151 | Mini-Warehouses (not in Industrial Park) |
| 156 | Wholesale, warehousing & storage (not in Industrial Park /in condo) |
| 157 | Wholesale, warehousing & storage (not in Industrial Park /in cluster) |
| 160 | Contract Construction (not in Industrial Park) |
| 166 | Contract Construction (not in Industrial Park /in condo) |
| 167 | Contract Construction(not in Industrial Park /in cluster) |
| 190 | Other Industrial NEC |
| 211 | Railroad, ROW, terminals, maintenance |
| 212 | Rail rapid transit, ROW, terminals, maintenance |

| CODES | EXISTING LAND USE DESCRIPTION |
|-------|-------------------------------|
| 213 | Bus, Terminals, maintenance, Special ROW |
| 214 | Motor freight transportation |
| 215 | Street and highway ROW |
| 216 | Auto parking |
| 217 | Air, runways, terminals and maintenance |
| 218 | Marine terminals |
| 219 | Other transportation NEC (Freight/taxi) |
| 221 | Electric, transmission ROW, plants, substation |
| 222 | Gas, pipeline ROW, plants, storage, etc. |
| 223 | Water, pipeline ROW, plants, storage, etc. |
| 224 | Sewage, plants, etc. |
| 225 | Solid waste disposal (refuse, garbage etc.) |
| 226 | Pipeline ROW and NEC (petroleum) |
| 229 | Other utilities, NEC |
| 231 | Telephone & Telegraph |
| 232 | Radio & Television |
| 239 | Other communications, NEC |
| 311 | Neighborhood Center |
| 312 | Specialty Center |
| 313 | Community Center |
| 314 | Regional Center |
| 315 | Super Regional Center |
| 316 | Promotional Center |
| 317 | Town Center |

| CODES | EXISTING LAND USE DESCRIPTION |
|---|---|
| 318 | Condo Center |
| 320 | Building Materials, Hardware, Farm Equip |
| 331 | Department Store |
| 332 | Discount Store |
| 333 | Variety or junior department stores |
| 334 | Apparel and accessories |
| 335 | Furniture, house furnishings |
| 336 | Drug stores |
| 337 | Condo Retail (in office/Industrial complex) |
| 338 | Commercial Use in Res Condo Dev |
| 341 | Supermarket |
| 342 | Supermarket plus general merchandise |
| 343 | Convenience grocery |
| 349 | Other food NEC (include fruit, meat, fish) |
| 351 | Restaurant with alcohol |
| 352 | Restaurant without alcohol |
| 353 | Carry-out Kitchen |
| 354 | Carry-out with seating |
| 361 | Motor vehicle sales (new and used) |
| 362 | Gasoline and Service Station |
| 363 | Gasoline Sale Only |
| 364 | Gasoline Sales and Car Wash |
| 365 | Service Station out of operation |
| 369 | Other automotive, marine, aircraft and NEC |

| CODES | EXISTING LAND USE DESCRIPTION |
|-------|-------------------------------|
| 390 | Other Retail NEC(not in shopping center) |
| 410 | Office Park |
| 421 | Low Rise Office(< = 4 stories) |
| 422 | Medical/dental low rise (< = 4 stories) |
| 423 | Government leased low rise(<= 4 stories) |
| 424 | Government owned low rise(< = 4 stories) |
| 425 | Condominium Office (< = 4 stories) |
| 426 | Condominium Medical (< = 4 stories) |
| 427 | Cluster Office (< = 4 stories) |
| 428 | Cluster Medical (< = 4 stories) |
| 429 | Converted Residential office(ex-dwelling) |
| 431 | General med/hi rise off (= > 5 stories) |
| 432 | Med/dental med/hi rise(= > 5 stories) |
| 433 | Government leased med/hi rise(= > 5 stories) |
| 434 | Government owned med/hi rise(= > 5 stories) |
| 435 | Condo office (= > 5 stories) |
| 436 | Medical office (= > 5 stories) |
| 490 | Other office NEC |
| 510 | Finance, insurance, real estate services |
| 520 | Personal services (laundry, photo, beauty) |
| 530 | Motor vehicle repair separately |
| 540 | Other repair services NEC |
| 550 | Veterinary hospitals |
| 590 | Other consumer/business services NEC |

| CODES | EXISTING LAND USE DESCRIPTION |
|-------|-------------------------------|
| 610 | Cemeteries |
| 620 | Hospital & Health Facilities |
| 630 | Post Offices |
| 640 | Police Stations |
| 650 | Fire & Rescue Stations |
| 660 | Correctional Institutions |
| 670 | Military Institutions |
| 680 | Welfare & Charitable services |
| 690 | Other public NEC |
| 710 | Churches, Synagogues |
| 720 | Civil, Social, Fraternal, Prof & Bus Association |
| 730 | Libraries |
| 740 | Permanent Exhibition |
| 751 | Nursery Schools |
| 752 | Public Schools |
| 753 | Private Schools |
| 754 | College, Universities |
| 755 | Special Training Schools |
| 759 | Other Educational Services NEC |
| 760 | Public Assembly, Both Indoor & Outdoor |
| 790 | Other cultural & entertainment NEC |
| 811 | Recreation Facility, Parks (private)-outdoor |
| 812 | Recreation Facility, Parks (public)-outdoor |
| 813 | Recreation Facility, Parks (government) - outdoor |

## CODES    EXISTING LAND USE DESCRIPTION

| | |
|---|---|
| 821 | Recreation Facility, Parks (private)-indoor |
| 822 | Recreation Facility, Parks (public) - indoor |
| 823 | Recreation Facility, Parks (government) - indoor |
| 831 | Golf Courses (private) |
| 832 | Golf Courses (commercial) |
| 833 | Golf Courses (government-owned) |
| 841 | Swimming pools - outdoor |
| 842 | Swimming pools - indoor |
| 850 | Boating Marinas - public & private |
| 851 | Condominium Boat Slips -private for sale |
| 910 | Agricultural Activities & services |
| 920 | Forestry Activities & services |
| 930 | Horticulture Activities & services |
| 941 | Sand & Gravel Quarrying |
| 949 | Other resource production & extraction |
| 950 | Permanent Conservation area, wildlife |
| 951 | Conservation Easement |
| 960 | Water areas |
| 971 | Vacant Land |
| 972 | Improved Land w dilapidated structure |
| 990 | Other resources uses NEC |